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OBSERVATIONS  
ON THE  
MEDICAL PROPERTIES  
OF  
IRON.

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BY JAMES C. MADISON,  
*OF VIRGINIA.*

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“ The natural infirmities of mankind, and perhaps, especially  
“ the vices to which civilized nations are so propense, will  
“ always render tonics most necessary implements in the  
“ hands of physicians.”

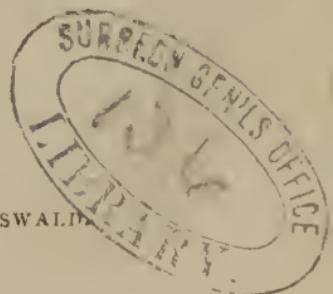
PROFESSOR BARTON.

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.....  
1805.





AN  
INAUGURAL DISSERTATION,  
FOR  
*THE DEGREE*  
OF  
DOCTOR OF MEDICINE,  
SUBMITTED TO  
*THE EXAMINATION*  
OF THE  
REV. JOHN ANDREWS, D. D. PROVOST, (Pro Tem.)  
THE  
TRUSTEES AND MEDICAL PROFESSORS  
OF THE  
*UNIVERSITY OF PENNSYLVANIA,*  
On the 3d. day of June, 1805.

and the public sector have been the most effective in addressing the problem.

These findings are important because they suggest that the most effective way to combat smoking is through a combination of public health regulation and taxation. In addition, they indicate that the public sector has been more successful than the private sector in addressing the problem.

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TO

# THE MEDICAL PROFESSORS

OF THE

UNIVERSITY OF PENNSYLVANIA.

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**I**N CONSIDERATION of their great intrinsic worth, and of the high rank, to which their talents have raised them, in the republic of Medicine, this Essay is most respectfully inscribed by their

FRIEND AND PUPIL,

THE AUTHOR.

TO

Dr. WILLIAM FOUSHÉE, Sen.

OF

RICHMOND, VIRGINIA.

---

**T**HIS ESSAY is inscribed by the Author, as a testimonial of the respect in which he holds his talents as a Physician, and above all, in consideration of the zeal with which he directed his earliest studies in Medicine.

Mr Isaac Cleaver with best  
wishes of his fellow graduate  
as author

John A. Shedd

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you will be soon at Washington daily, and you will have  
the pleasure of meeting old friends, & to be made acquainted  
with the remarkable men who are now making a name in  
our country. You will also find many opportunities for  
a more direct & personal acquaintance.

It would be no advantage to me to adduce any names  
or to speak of the great men who are to be found in our  
city. I will not say there may not be some who are  
less known than others, but they are not so well known as  
to render it difficult to distinguish them from the rest.  
I will, however, be glad to name a few, if you will "just  
tell me what you want to know." I will, however,  
not name any of the great men who are to be found in  
our city, but will rather direct your attention to the  
men who are to be found in our city, and who are to be  
found in our city, and who are to be found in our city,

and who are to be found in our city, and who are to be found in  
our city, and who are to be found in our city, and who are to be found in

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OBSERVATIONS  
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IN the cursory view which I propose to take, of iron, my observations shall be chiefly confined to the discussion of its medical virtues. I shall omit the consideration of its natural history, as that has already been ably investigated by the most scientific chemists of the eighteenth century.

Iron may be considered, in its operation on the human system, as a tonic of the most active kind ; and on this point, we have the assent of the most eminent medical men. Gmelin, a physician and a naturalist of great research and observation, considers it as a corroborant, "Ejus princeps virtus est robورans," that is, its principal virtue is that of a corroborant, or bracer. The learned Dr. Cullen considers iron as tonic and *astringent*, especially if combined with acids. I think, that it may with more propriety, be considered as exclusively tonic. If it did possess astringency, it certainly would, like *sac. Sat.* which is decidedly tonic and astringent, restrain active hemorrhages. But more of this, hereafter.

Though I do not admit astringency as a property of iron, in any form, yet it is undoubtedly a stimulant. The saline pre-

parations of iron, are known to powerfully stimulate the stomach, when taken in large doses, and even sometimes to produce nausea, vomiting, and purging. The oxyde of iron, when long used, is observed to encrease the redness of the lips, and to flush the face. This effect was evidently known to Dr. Sydenham. The secretions are encreased by its use, especially the menstrual discharge, as we are told by authors : for this reason some have considered it as an emanagogue. The action of the heart and arteries is encreased by its use, as is proven by experiment.

Iron appears capable of passing into the circulation. Mr. Lorry says he has detected it in the urine of those patients who had been long in the habit of using the different preparations of iron. He also, like most of the physicians of the present day, has observed that it causes the blood to assume a dark color. With respect to the action of iron on the blood, they speak very favorably. They tell us, moreover, that it imparts a more healthy consistence to this fluid, and in this respect is tonic and alterative, and unites in its operation the properties of many medicines. At this advanced and enlightened period of medical science, it would be empirical indeed, to admit these extravagant assertions. It appears to me by far more rational to suppose that it produces good effects, by imparting, through the medium of its tonic property, a new and more healthy action to the stomach, which tone, or new action, is, by sympathy, communicated to remote parts of the system, labouring under similar debility.

As iron may be given in the largest doses, without the inconvenience which attends most medicines, when exhibited largely ; and as it is more durable and constant in its operation, than any tonic we are acquainted with, so it is, in these respects, the most important remedy in the diseases in which tonics are exhibited. In one point of view, it is particularly pre-

eminent above all the medicines of this class ; as it has not that heating quality which tonics, and especially the bitter, decidedly shew, when exhibited.

Iron is by no means a new medicine, since it appears to have been known to the physicians of the earliest ages. Melampus who flourished as a physician in a very early age, speaks of it as a medicine that gave strength to the system. Celsus and Dioscorides also speak of iron as an useful medicine. At present the use of iron is by far more generally known, and is employed in a variety of forms. The most common forms, are the *tinctura martis*, the *rubigo ferri*, *filings of steel*, and the *flores martiales*. There are several other preparations of iron, spoken of by writers ; however, they are not of much consequence. The results that evince themselves on combining the different acids with iron, with a view to procure some of these preparations, are similar in some respects. The sulphuric and muriatic acids, when perfectly concentrated, have no effect on this mineral ; but action readily ensues, on mixture with a little water. In these cases, hydrogen gas, or inflammable air is always produced ; not as was once supposed, from the decomposition of iron, but from the actual decomposition of water, which the immortal Lavoisier has by an elegant experiment proven to consist of two airs, called by the new nomenclaturists, oxygen and hydrogen. The oxygen of the water combines with the iron and oxydates it. In these respects, the phenomena which the different acids present, on mixture with water and iron, or any other metal, are similar ; but they differ in some other : for instance, with the sulphuric acid, iron may exist in two states ; first, either saturated with the acidifying principle, i. e. oxygen, forming oxy sulphate of iron ; or 2nd, having less oxygen, forming the common sulphate of iron, or copperas of the shops. The color of the oxy sulphate of iron approaches to a pale yellow. The common appearance of the other is well known : the oxy sulphate of iron, only, will pro-

duce a black color, with the alchohol of galls. & this has been clearly proven by decisive experiments. It is true, that the sulphate of iron of the shops renders the alchohol of galls of a black color ; but this effect is to be referred to a portion of oxy sulphate of iron, which is combined with it. If the common sulphate of iron is exposed to the agency of the atmosphere, it absorbs its oxygenous portion, and in consequence of this addition becomes a true oxy sulphate of iron. A partial, or semi oxyde of iron may be obtained, by exposing the sulphate of iron to an intense and long continued heat. I say a partial oxyde of iron, for a portion of the acid will always remain, as I found by experiment. The experiment consisted in washing the coleather of vitrol, as it is called, with warm water, and testing the water with the muriate of Barytes which always discovered the sulphuric acid by the production of white clouds ; this test is the most sensible we are acquainted with, for this purpose. But to return from this digression—Dr. Graves speaks of the tinctura martis, i. e. the sulphate of iron, as tonic and astringent in doses of 10 to 20 drops, two or three times a day. The muriate of iron possesses all the virtues of the sulphate.

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We are told, and the authority is indisputable, that the rust of iron has been given to the amount of one ounce, in twenty-four hours, which it must be confessed was on the whole, a pretty large quantity. The common dose is one drachm. The limatura ferri may be given with great safety, to the adult, in doses of one scruple. The physicians, particularly of this country, are much in the habit of using the limatura ferri as well as the rust. It appears to me, then, that since they report so very favorably of this mineral, in these forms, the addition of an acid cannot contribute to the increase of its tonic virtue. Dr. Cullen, however, thinks activity, as it respects the system, cannot be attributed to crude iron, and of course he believes the saline preparations of this metal more proper, as they are soluble only in the stomach. Notwithstanding the doctor's

objection to iron in a crude shape, as a medicine, we find him frequently prescribing steel filings, and he gets over his objections, by observing, that they do good, only by combining with acid in the stomach, the constant existence of which in that viscus, he was at all times fond of advocating. That iron is ever neutralized in the stomach, is a question in my mind that admits of much doubt. The process, however, we certainly know, could not go on with convenience to animal health. The ingenious Dr. Barton is one of those physicians, who think, the rust of iron, and steel filings, active with regard to the human constitution, exclusive of any combination with acid in the stomach, and in my opinion they certainly are so, as they evince their good effects in diseases in which we cannot suspect with propriety any great morbid acidity. Having thus enlarged somewhat on the general properties of this metal, and related some of its most favorite preparations, I proceed to state, in what diseases it is injurious, and also those in which benefit is experienced from its use.

Iron, which we have supposed tonic, and of course stimulant, as all tonics have decidedly that property, more or less, we presume, must be an improper medicine in all active diseases, which professor Rush has ingeniously supposed to depend on one proximate cause, namely, an increased or irregular action of the system of blood vessels. Gmelin, to whose excellent treatise on iron, I have before referred, mentions decidedly the impropriety of giving it to patients, "with fibræ rigidæ, viscera pertinaciter obstructa, et sanguinis circulatio augeta."—Also in every species of hemorrhage ninety-nine in the hundred of which depend on great arterial action, it is manifestly injurious, so far as it increases the danger arising from this evacuation, though it has been recommended by authors of eminence. In recommending this medicine in hemorrhage, it appears they had an eye on its astringent property, which I have before questioned. Iron, I affirm then, can only

be given with advantage in the debility which predisposes to hemorrhage and which succeeds its attacks : thus also, I would observe, that as I consider, with professor Rush, debility as much an unit as is disease, and that it always precedes and follows general diseases, so is iron, like other tonics, well suited to remove this debility.

The diseases which are marked by some decided characters, and in which benefit has been derived from a course of chalybeate medicines, are pretty numerous ; 1st, In hysteria and hypochondriasis, which depend on debility of the nervous system, and especially the former, Dr. Cullen thinks has for its proximate cause great mobility of the nerves, iron has been prescribed by physicians of all countries. Dr. Sydenham, to whose successful labours in the vast department of medicine, the physicians of the present age are so greatly indebted, had the highest opinion of our medicine in hysteria. But let me here remark, that this great genius of the seventeenth century, was too much of an observer, or I may rather say, theorist, to prescribe our medicine indiscriminately, or without respect to the state of the system. He observes that it seems evident to him that the chief curative indication in this disease, is to strengthen the blood, which is the source of the animal spirits : but, continues he, as this disorder, meaning hysteria, may have by its long continuance, vitiated the fluids, it will be proper to bleed and use cathartics. Though the doctor's theory is whimsical, and by no means accords with that of the present day, yet we find that it led him to the adoption of the same treatment which is pursued by the majority of physicians at present. With Sydenham, they find it frequently necessary to use the lancet and cathartics, especially in plethoric habits, before prescribing chalybeate medicines. With the modern physician, he believes steel gives a florid color to the face, heats the system, and quickens the pulse, and this was another reason which induced this most excellent physician to be cautious as to the use of chalybeates, in hysteria, before proper evacuations.

It is however, sometimes necessary to prescribe immediately, when this disease attacks debilitated habits, the preparations of iron. Sydenham seemed as sensible of the propriety of this practice, as he was of the impropriety of ~~not~~ prescribing our medicine immediately in plethoric habits. This practice is also sanctioned by the assent of the illustrious Hoffman. In treatment of hysteria, Cullen preferred the flores martiales. The martial flowers, though certainly powerfully tonic, have one great inconvenience attending their use, as they cannot, like the rust of iron, be exhibited in doses sufficiently large to do good. In large doses they irritate the stomach, and produce nausea. Sydenham was fond of steel which had been infused in Rhenish wine; the steel, in course of time, became dissolved in the acid of the wine, and in this state, he tells us, by combining it with some saccharine matter, he found it to be a very elegant preparation. All the physicians since his time have remarked, that much advantage is to be derived from combining iron with some of the antispasmodic medicines, as they are called. The most eligible are asafætida, myrrh, musk, &c. The most proper time of administering iron, as well as other tonics, in hysteria, is in the interval between the paroxysms. By pursuing this method, much advantage is gained. The system is then in a state of débility, predisposing to another attack, and more favorable, of course, to the operation of tonics. In hypochondriasis, iron is sometimes indicated. Hoffman says, that its use is not to be condemned in this disease. The occasional use of exercise, and of gay company, are powerful auxiliaries to iron, in the cure of this disease.

Physicians are not perfectly agreed respecting the propriety of cathartics during the exhibition of chalybeate medicines, in hysteria; some think they may sometimes be given with advantage, to prevent the accumulation of sordes, and they have advised, occasionally, a combination of iron and Rhubarb. On

the other hand, we find Sydenham averse to the exhibition of purgatives, during a course of chalybeates. He speaks of their undoing what had been effected by the chalybeate. I suppose purgatives are here only indicated, when the belly is much constipated.

2. In dispesia, which Dr. Cullen thinks nearly allied to hysteria, as the latter disease has many of the symptoms of the former ; and which Dr. Rush considers as the connecting link between hysteria and hypochondriasis, iron has been given with the most happy success. It sometimes has been found necessary to use venesection, before we can exhibit this metallic tonic. In a case of dispesia, Dr. Rush tells us, that he found, in a certain patient, two or three bleedings absolutely necessary, before he could give iron with advantage. Dr. Cullen had a high opinion of chalybeate medicines, in dispesia. Under the third indication of cure, he speaks of iron as a grand restorative of the tone of the stomach, and advises it to be employed in large quantities, and in different forms. It should be combined with some aromatic, because it then will set better on the stomach, and perhaps its tonic power may be increased thereby. Dr. Rush speaks highly of the oxyde of iron combined with garlic, in this disease.

3. Whether any of the saline preparations of iron, like those of copper, prove diuretic, so as to be given with this view in dropsy, I know not. But however, in what is called the atonic state of dropsy, the symptoms of which are a quick weak pulse, and little or no preternatural heat or thirst, this metallic tonic, and also some of the gentle preparations of mercury have been given with success. Professor Rush, in the second volume of his Inquiries, informs us, that he has cured an incipient ascites and anasarca, by large doses of the rubigo ferri. Dr. Sydenham speaks favorably of iron and garlic, in cases of incipient dropsy.

4. Iron has been administered with success in obstructions of the liver and spleen, attended with little fever, or in the a-tonic state of these diseases. In obstinate obstructions of the catamenia, and in that distressing disease, namely, the fluor albus, it has been much extolled as an useful medicine. It gives tone to the debilitated vessels of the uterus, enabling this viscus thereby to perform this curious operation of nature, with regularity and safety to female health.

5. In recommending, in obstinate intermittents, this medicine, in preference to the much celebrated Peruvian bark, I am afraid I shall be accused of medical heresy. But the fact speaks for itself. A physician of the greatest observation, assures me, that in obstinate intermittents, which have resisted the bark, he has given our medicine, with the happiest success. This I can readily believe; since there are many states of the system, especially those in which it is very irritable, that bark, by its excess of stimulus, aggravates the disease, and frequently defeats the object of the physician, by passing off by the bowels. Now, as iron is less stimulant than the bark, but equally as tonic and durable in its operation, it appears much better calculated to produce the desired effect, and in fact, its efficacy in the hands of this experienced physician, has put the matter beyond a doubt. It does not, like the bark, move the bowels. With these advantages, it certainly deserves a trial, especially in those cases that will not yeild to the bark.

7. I have before observed, that iron promises to be serviceable in the debility which precedes and succeeds disease. Thus we find, in the forming state of pulmonary consumption, and in the debility in which the body is left, after a paroxism of the gout, iron is highly spoken of, by Professor Rush. He observes, when the disease, speaking of pulmonary consumption, has not yeilded to the desertion of its remote and exciting

causes, I have recommended the cold bath and steel. He continues, however improper, and even dangerous, these remedies may be, after the disease assumes an inflammatory type, and produces an effect on the lungs, they are perfectly safe, in the state of the system we have described. He here alludes to the debility predisposing to consumption. In the debility succeeding gout, chalybeates are recommended. The same author observes, that they are more safe when habitually used, than bitters.

8. I have now only to speak of iron as an anthelmentic. Perhaps amongst the great variety of anthelmentic medicines, there is none more deserving the attention of the physician, than iron, in its various forms. It has many advantages over calomel, spigelia, and some other anthelmentics, by reason of its mild qualities. Calomel, sometimes, by so readily attacking the salivary glands of children, is rendered an improper medicine; and spigelia also, by producing many of the symptoms of hydrocephalus, by its narcotic, or stimulating qualities.

Iron, though it has so many advantages as an anthelmentic, yet it is but lately, that it has been given in doses sufficiently large, to be rendered serviceable. Sydenham gave it from ten grains to a scruple, and even to a drachm. Werlhoff to two drachms. Professor Rush speaks highly of the simple preparations of iron, whether in form of steel filings or rust, as an excellent vermisuge. If it fails, says he, it is because they are given in too small doses. The doctor has carried the use of this medicine, in worms, further than any physician of the present age. He tells us, he has prescribed it from five to thirty grains, every morning, to children between one and ten years of age, and to adults, in doses of two drachms to half an ounce, every morning, for two or three days. Iron has not

been administered with as much success in the other species of worms, as in *tænea*. The ascarides in particular, occupy the rectum, completely enveloped in the mucus thereof, escape in a great measure, the operation of this valuable anthelmentic. I hope it will not be out of the way to observe, that camphor, dissolved in sweet oil, and injected into the rectum, expels these troublesome intruders. Dr. Barton thinks, that the vapour of camphor, which is so deleterious, especially to moths and other insects, in this case produces the effect. As an anthelmentic iron operates chemically and mechanically. Thus far for the use of iron in diseases, and in accounting for the many disappointments we experience in the exhibition of our medicine, Dr. Cullen supposes, that the good effects of it, generally speaking, have been missed, by giving it in too small doses. He observes, that as the saline preparations are apt to irritate the stomach, they should be given in small doses, and increased gradually to what the stomach will bear. All this may be admitted as plausible, but I am persuaded, if iron, or indeed any other medicine fails in the disease in which we exhibit it, it is because, it is given without reference to the state of the system, which, to use the words of an eminent physician, "rises and falls like a thermometer." It may be laid down as an axiom in medicine, that that physician who is best conversant with the different states which the system undergoes in disease, will always reap the most advantage from the medicines which he exhibits.

Having thus spoken of iron, generally, as a medicine, I have now to add some few observations relative to the use of chalybeate springs (which we may consider as one of the medicinal forms of iron) in cure of diseases. But before we proceed to mention their medicinal virtues, it is proper that they be considered in a philosophical, or rather chemical point of view.

The existence of iron, with a small portion of some saline body, in water, forming what are denominated chalybeate springs, is by no means uncommon. Our own country presents many of them to our view. In these springs, iron is suspended either by solution in the carbonic or sulphuric acids. The ingenious Hoffman was of opinion, that iron could not be suspended in these waters, unless previously corroded by an acid of some kind; on the contrary, Sydenham thought that all chalybeate springs were impregnated with the ore of iron. Frequently the same water holds the carbonate and sulphate of iron, which we have been just speaking of, in solution, together. As to the carbonic acid, Bergman tells us, that water well saturated with it, will dissolve  $\frac{1}{1000}$  of its weight of iron. The water of carbonated chalybeate springs is very transparent, when just drawn, but a carbonated oxyde of iron is deposited, on exposure to the influence of the atmosphere. When iron is held in solution by means of the carbonic acid, it is easily disunited from its acidifying principle, by lime water, which is a very delicate test. The carbonic acid, having a greater attraction for the lime, than for the iron, is rapidly disengaged from its ferruginous basis.

Spring rendered chalybeate by the sulphate of iron, are also common. With the ingenious Dr. Saunders, I suppose that these springs are owing to a natural or spontaneous decomposition of pyrites, which, with more propriety, may be called sulphurets of iron. The sulphate of iron, in this species of chalybeate springs, is easily detected, by the muriate of barytes, or the prussiate of lime. The muriate of barytes detects the presence of sulphuric acid, by the production of white clouds, which is the sulphate of barytes, or ponderous spar. The muriate of iron is dissolved in the water. The prussiate of lime renders them of a blue colour, forming prussian blue, by union of the prussic acid of the lime, with the

iron, which was in a state of corrosion, in the sulphuric acid. This last test, the prussiate of lime, is much recommended by the chemists. Thus far, for the chemical view of chalybeate waters.

In a medical point of view, these springs have been extolled by the earliest physicians, and even by some of the present day, as a grand acquisition to the healing art ; and in fact, they are certainly, in some cases, of great utility. When the different preparations of iron, have failed in producing happy effects, in the diseases I have mentioned, Dr. Sydenham refers us to the use of these springs. I believe they possess, in a much less eminent degree, the virtues of our medicine, in other forms ; but the novelty of the scene, exercise, and various amusements, act as gentle stimuli, and as grand auxiliaries to the springs, in producing their salutary consequences.

Chalybeate waters, like other forms of iron, are certainly stimulant and tonic. The Bath water, which is a very strong chalybeate, Dr. Falconer tells us, when drank fresh from the spring, increases arterial action, heats the system, and excites the secretions. Chalybeate waters are diuretic ; they also open the pores of the skin, and produce a gentle diaphoresis. A costive property is generally allowed to belong to these waters. Dr. Saunders says, " This is not owing to any astrin-  
" gency they may possess, as from the want of an active sti-  
" mulus to the intestines, and probably, also from the deter-  
" mination to the skin ; for, (observes the Doctor) if per-  
" spiration is checked, during a course of Bath waters, a purg-  
" ing sometimes supervenes."

Chalybeate waters generally excite, or stimulate the stomach. If they excite a pleasing sensation in that viscus, and which is succeeded by a gentle increase of appetite, we are ad-

vised, by writers on that subject, to continue their use ; but if fever is the consequence, head-ache, nausea, no secretion from the kidneys or skin, they are signals which uniformly forbid a continuance of their use.

The ingenious Dr. Hoffman, who flourished in the seventeenth century, had ideas on this subject, nearly similar to those we have mentioned. In his excellent treatise on Mineral waters, he speaks of steel waters, as being endowed with an operative and strengthening property, so as to be, (I am using his words) advantageously employed, as well externally as internally. When drank, continues this respectable author, they loosen the belly, but strengthen the body and stomach, and provoke the appetite, and may be, therefore, very safely and very serviceably used, in such diseases as give way to any of the preparations of iron.

Having thus shewn, that chalybeate springs are stimulant, we may observe, that, like the different preparations of iron, they are improper, in all diseases of great arterial action. Here I am met with a similar and happy observation, from the ingenious Dr. Saunders, who observes, " that there can be no " doubt, but that its employment is hazardous, and might oft- " en do mischief in various cases of active inflammation, es- " pecially in irritable habits, where there may exist a strong " tendency to hectic fever, and even in the less inflammatory " state of diseased and suppurating viscera, and, in general, " where a quick pulse, and dry tongue, indicate a degree of " general fever."

But in atonic diseases, and in those " cases where a gentle " gradual and permanent stimulus is required, and when " there is little to be feared from sudden and transient heat, " and increase of pulse," they promise to be of much ser-

vise, and have been actually found to answer the expectations of the patient and his physician. To remove them, a constant perseverance in their use is requisite.

In such diseases as fluor albus and chlorosis, when they have assumed the atonic shape, and when but little fever attends, the greatest benefit is frequently derived from the use of chalybeate waters. The use of the warm Bath waters which I before mentioned was a strong chalybeate, is said to remove that languor of circulation, and obstructions of the natural evacuations, which characterise these troublesome diseases. Chalybeate water, like iron, in other forms, has proven equally serviceable in debility of the stomach, or dispepsia.

These mineral waters have their advocates as resolvents of indurated and obstructed viscera. The jaundice, which depends on some obstruction of the liver, and which, in consequence of not yielding in its acute form to venesection, mercury, &c. has put on the atonic type, is often removed by a course of chalybeate waters.

When speaking of iron, I mentioned its utility in the convalescent state of gout ; the same may be said of chalybeate mineral springs. Dr. Saunders speaks of the benefit of bath water in what he calls anomalous affections of the head, stomach and bowels from gout. I would not deem it a safe remedy; as he himself observes, that when persons have these gouty affections, shifting from place to place, it will bring on an increased action in the system. These anomalous symptoms would yield more readily to the lancet and other evacuant medicines. Chalybeate waters when used externally evidently manifest a tonic power. They have been employed externally with advantage in cases of paralysis and in chronic rheumatism, depending on debility. Dr. Charlton seems to be of op-

nion, that the use of chalybeate water should be chiefly confined to that species of rheumatism unattended with inflammation, which constitutes the rheumatlagia of Dr. Rush.

I have now brought to a conclusion this essay, the imperfections of which, I am sensible are many; and to you, worthy Professors, whilst I now offer my most sincere thanks, in consideration of the valuable fund of medical knowledge which I have received from each of you, in your professional capacities, permit me also to present my best wishes for your future happiness, and for the prosperity of my ALMA MATER.





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